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PATTEN'S DYNAMIC ECONOMICS.*

This is the beginning of a great work. The pamphlet contains one hundred and fifty-three pages ; but it suggests several hundred to the reader, and imposes on the writer the necessity of furnishing a still greater number. It is made up of beginnings of studies that call for completion. The field of Dynamic Economics is unlimited, and each pioneer work that occupies a part of it has the effect of making the whole field seem larger.

The economy of progress is unlike that of rest. Advancing societies are under the control of natural laws that have no field of action in stationary societies. Civilization means a perpetual transition from one typical condition to another. Each condition contains in itself forces that tend to create a different condition. A modern industrial state is the result of a long evolution. The forces that have created it have operated from primitive times ; but the state as it stands is not a consummate result. It is not the full fruition of anything. The industry of to-day is not perfected in any particular. There is that about it that calls for change ; and there is in the society itself a more and more active and irresistible impulse to continue the evolution, and to inaugurate changes, if possible, every day. In a sense the consummate result of civilization is this instability ; the best thing about it is the increasing difficulty of rest, the increasing certainty of continuous progress. We struggle toward conditions in which further struggles are inevitable.

There is an economy of rest and an economy of change or transition ; and the two have not been duly separated in scientific studies. They need to be presented one at a time and sharply contrasted ; whereas they have been presented

* THE THEORY OF DYNAMIC ECONOMICS, by SIMON N. PATTEN, Ph. D., Professor of Political Economy, Wharton School of Finance and Economy, University of Pennsylvania. Pp. 153. Philadelphia, 1892.

together and greatly confused. Professor Patten has isolated the dynamic economy by contrasting a progressive society with an unprogressive one. What the one society has and the other has not is the dynamic element.

It is to be noted by the reader that while the stationary society is not under the influence of dynamic laws, the advancing society is under the influence of static ones. Two sets of forces dominate American industry, and the problem to be solved consists in separately tracing the influence of each. The green water on the crest of the Horse-shoe Fall at Niagara is governed by static laws as well as by dynamic ones. If it were not for those forces that are studied under the head of Hydrostatics the falling water would be unable to excavate the rock at the bottom of the abyss into which it plunges. Motion adds one force but does not destroy the other. The most progressive society is, in fact, the one in which static law is most efficient.

In Professor Patten's studies the term static is applied to societies and to persons, as well as to a class of forces. A nation is static when it is not changing, and a man is so when his list of wants is not diversified from time to time. The nation and the man are dynamic when they are progressing. The contrast that the author draws between the two conditions must, in the end, be made to reveal the difference between static law and dynamic law in one condition, that, namely, of a progressive society. In the industrial states in which we are chiefly interested, both sets of forces are in particularly vigorous action.

The clear benefits that accrue to men through industry consist of personal gains secured by income, and not counteracted, in their effect on the man, by the sacrifices entailed in earning the income. They are, in a sense, surpluses. Give to a man enough to make him, on the whole, as well off as he was before he began the work of a day, and no more, and his day's work and its earnings afford no clear benefit. Whatever of gain he receives above what is necessary in order to offset the personal cost of the work is a

surplus. This is a benefit that is not in any way neutralized.

The cost that figures in the problem is subjective. It is the unfavorable effect of industry on men themselves. How much of happiness does a laborer lose by reason of the fact of working ten hours a day for a year? If this question be answered we shall have a statement of the cost of whatever the man produces within that period.

What, then, are the surpluses, or gains unbalanced by costs, that come to men engaged in industry? One of them is the excess of product that is secured by working land of superior quality, as compared with what is gotten from the poorest land in use. Rent is a surplus. The superiority of a piece of good land makes the part of the food supply that comes from it come with less than the standard amount of personal sacrifice. Classical thought is here dominant. Yet the author passes through and beyond the region within which, in their study of rent, the classical writers halted. There is a surplus accruing from the use of other instruments of production than land. Capital affords its net gains, and interest contains a surplus. Dr. Patten has performed the difficult feat of getting beyond the point reached by the older English economists while following their chosen route. He has met and surmounted the major difficulties involved in a profound study of Ricardo. The unnatural gulf that was once made to separate land from capital is closed, in this study, along a considerable part of its length.

Intelligence affords a surplus; and this is the chief one that appears in distinctively dynamic economy. Here is the key to the major problems of production. Thought may make larger and larger our unneutralized gains.

In the main the present study concerns itself with forces that centre in consumption. In social economy it is the consumer who is the dictator. This is true not merely for the old reason that he orders what he will in the market, and the producer must do his bidding. The consumer is, indeed, like the guest at the hotel whose caprices are—in theory at

least—respected by the attendants. What the wishes of the guest are is of primary consequence in determining how much of good he will get from the service, provided that the service itself is perfect. With one list of wants to be satisfied he may get little benefit, while with another he may get much. A favorable change on the character of a man's consumption reacts directly on his well being, and that too without necessarily calling for an enlarged production. The effect of changes in consumption penetrates directly to the recesses of the man's being. It touches springs of personal welfare from which the outward machinery of production must stand aloof. If the mill makes any one really better off by the use of its products it is because the wants to which the products correspond are of the right kind. If we change our social list of wants for the better we take a short cut to happiness. With no more energy expended in production we get a better personal result.

This is equivalent to saying that with a fixed amount of productive force to be used a man does not necessarily get a fixed benefit, since his sensitiveness to the effect of the force can be made greater or less. A proper *varying* of consumption thus multiplies the well-being that is the fruit of industry. In production man works on nature; and the better he works the more there is of modified nature, or wealth, as the result. In consumption nature works on man; and the better the process the more of well being directly results. Dynamic changes in consumption mean this improved working of nature, and mean more and better manhood.

There is a special reason for making now a careful study of this central principle, since through all its applications there runs a conception of cost and of utility that is likely to differ from the reader's conception. One is in particular danger of contradicting Dr. Patten without disagreeing with him, by reason of a differing nomenclature. If a full allowance be made for the author's use of terms, I venture to affirm that the chief conclusions of the work need supplementing, indeed, but not controverting. In secondary

matters there is room for controversy. If we use the terms *cost* and *utility* in one way, the surplus gains that are a chief subject of study appear to exist, though there are new elements yet to be introduced in taking the measure of them. If we use these terms in another sense, one of the varieties of surplus will vanish altogether.

That this point is of importance to the student will appear in connection with the parts of the work that we do not here examine. Surpluses form, as is shown, a fair subject of taxation. In cases where the individual cannot keep them in any case, and where the state can keep them, any tax that may be imposed on this element of gain is, in effect, burdensome to the individual. Evidently it is of cardinal importance to know whether an overplus of gain that is to be drawn on in this way is in reality a clear surplus or not.

Production, as the author strikingly says, is a neglected portion of political economy. What is evidently true, in the department of production as elsewhere, is that the dynamics of the subject have been neglected. The entire process of isolating dynamic forces and effects is a new scientific operation; and the impulse given to this mode of study is an invaluable service of Professor Patten. What needs to be known is the character of those influences that make for better production; and, to that end, it needs at the outset to be known what is at bottom good for the individual consumer. We must make sure what is the exact nature of the ultimate net benefits that may come to a man by reason of changes in production. We must test the surpluses, as before.

In following, then, Dr. Patten's principal analysis, we enter on no less an undertaking than that of attaining a scientific basis for an optimistic faith that is in all of us. The belief that the world is improved is to be demonstrated by scientific formulas and illustrated by diagrams. By closer conformity to the demands of physical law, psychological law and social law, richer and richer returns are to be forthcoming from the collective workshop of the world.

The gains appear on illustrative diagrams that should be as closely tested as those of the mathematician. Certain areas represent gains accruing from industry ; other areas represent sacrifices ; and the excess of the former as compared with the latter represents the net benefit of the process. The change in the lines that makes the area of excess larger represents the dynamic effect that all humanity is seeking. The identification of the causes that thus change the lines and increase the areas of excess is nothing less than an economic solution of the problem of human life. Momentous indeed are the results that hinge, as it were, on the correctness of chalk lines. We must spare no pains in testing them, and at the outset we must make as sure as is possible of their meaning. We must get the author's point of view that we may do full justice to his theory. The result richly repays the effort.

The starting point in the study is man. The facts of his being and of his personal experience afford the premises. Unpleasant experiences constitute true cost, and pleasant ones are gain. There is a reference in the work to old and discarded views of cost. If money paid by an employer constitutes the cost of what he manufactures, it is because the money is an embodiment of value, and the creating of that value has imposed somewhere a personal burden. Wheat consumed by workers can, by a distorted view, be forced into the position of an element of cost, only by virtue of the personal sacrifice that the securing of the wheat has imposed on some one. In a normal view the working and the "waiting," or abstaining that bring a thing into existence constitute the economic cost of it. Man, as the bearer of the burden of production, is back of a commodity as its cause, while man, the consumer, the recipient of good, comes after a commodity as showing in his person its effects. Economics studies men in these two relations ; and the process that the science analyzes is his effort to get more as a consumer than, in his capacity as a producer, he sacrifices.

Some things have "absolute utility ;" which means that

they are of such a nature that we must have them, whether the using of them, gives pleasure or not. Food that nourishes but is so unpalatable that the disagreeable taste of it destroys, in the mind of the man who is eating it, all consciousness of pleasure derived from the operation would afford an illustration of an absolute utility unaccompanied by any other. A drug capable of saving life, but not pleasant to the taste, would fall in the same category ; while if the same drug were nauseous but quite necessary for the patient, it would have, besides the absolute utility, a negative utility due to the discomfort that comes from taking it. It is immediate pleasure giving power that constitutes the second variety of utility, and it is this with which Professor Patten's analysis is mainly concerned. The utility of a coat is measured by the pleasure a man gets from wearing it. If there is a patch on it this pleasure may be more than neutralized ; it may be turned into actual pain. Yet the man may continue to wear the garment because of its absolute utility. It is a thing that he must have, though it never ceases to annoy him.

It is at this early point in the author's study that the difference between his thought and that of others needs to be noticed. In this special conception of utility there is enough to set Dr. Patten seemingly at variance with others on the subjects that he is about to treat. A thing that is useful but painful in the using has, in this study, two kinds of utility, of which one is absolute and the other is negative. In the commoner view such a thing has its degree of utility, like anything else ; but in estimating the degree the owner takes into account all effects, whether pleasant or unpleasant, that come from the using of it. The unpalatable food, the nauseous drug, the dentist's forceps and the surgeon's knife have a degree of real usefulness that is capable of being approximately estimated. How much better off, on the whole, is a man who utilizes one of these things than he would be if he let it alone ? If he can answer this question he has assigned the article to its proper place in the scale in

which commodities are mentally tabulated. The pain that comes from the use of the commodity, as well as the prolonged well-being that follows, are allowed to have their due importance in the estimate.

The surplus gains come from pleasure-giving articles. Every dinner includes bread or its equivalent; not every one, in the summer, includes ices; and in the pleasure derived from articles like these lies the difference between one dinner and another. Unnecessary but desirable things constitute the surplus of the consumer.

The standard from which the surplus is measured, the personal cost of getting these things, needs to be even more carefully scrutinized. It is here that there lies a special danger of misunderstanding and unnecessary controversy. A part of this surplus vanishes if we estimate cost in one way; it remains if we take the author's mode of estimating it.

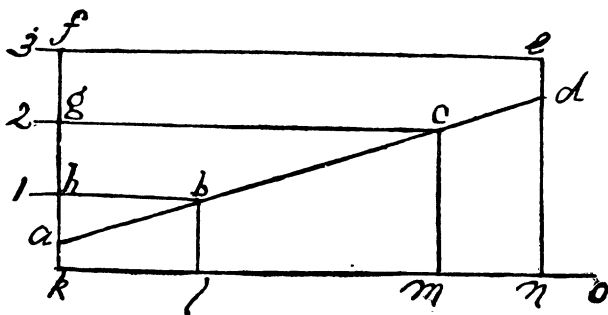
In Dr. Patten's view the cost in the case is the sacrifice directly involved in the securing of the pleasure-giving articles. The ices in the illustration give a pleasure that is not fully offset by the labor that is expended in paying for them. If a workman can earn a dime by a half-hour of extra labor, and if the ice that completes his dinner gives a pleasure that more than offsets the pain involved in this labor itself, then there is an overplus of benefit due to earning the ice and eating it. The cost in the case is the extra burden entailed by the final half-hour of labor. If we accept this idea of cost, we accept with it many important deductions. If we adopt another conception of cost we reach different conclusions, and, in particular, we find that a definite part of the surplus gains that are traced through the industrial process altogether vanishes.

There are indirect effects of labor to be taken into account, and they neutralize the overplus of benefit derived from the ices. These articles stand for the "final increment" of consumption, and this increment is worth what, directly or indirectly, it costs. The dish that the man, in the illustration,

hesitates in ordering may give pleasure enough to more than offset the fatigue of working to pay for it; and yet it may yield no surplus above its total cost.

The earlier hours of a working day are but slightly onerous; and the burden of work increases as the period of labor is prolonged. At some point, say at the end of the tenth hour, the man if he is free and is working by the piece, will voluntarily stop. Why does he quit work at exactly this point? Because, in his view, there is no real net benefit to be had from working longer. The work in some way deducts from his well-being as much as the articles bought with the wages of the work add to it. The man grinds knives or pegs shoes till the piece price of another bit of work, transformed into a newspaper, a picture, a ticket to the theatre, or a glass of soda water or of whiskey, according to the man's habitual mode of valuation, offsets the entire sacrifice involved in doing the bit of work. Labor naturally stops where, by the common mode of thought, true surplus gain vanishes. Yet Dr. Patten finds a surplus accruing from the last and hardest increment of labor; and this surplus is a central element in much of the following reasoning. The existence if it depends on the use of a special conception of cost, is the standard above which the surplus is measured.

We may best reveal the character of this excess of gain by reproducing the diagram and quoting the text that describes it.



After stating that a man naturally stops working when the pain of the last period of labor equals the utility of the last increment, Dr. Patten finds a reason why, in a highly efficient state of industry, this rule of equality of gain and sacrifice does not actually hold true, in so far as the final increments of the two are concerned. The last increment of gain more than offsets the mere pain of the last period of labor.

"We may imagine the pain of each increment of production to be represented in the above figure by the distance from the lines ad and kn , while the marginal increment of consumption is measured on the line kf , and the length of the working day on the line ko . When the marginal increment of consumption represents one unit, and is measured by kh , the length of the working day will be kl , and the marginal increment of production will have its pain measured by bl . When, however, the marginal increment of consumption is increased to two units, kg , because of an increase in the variety of consumption, the length of the working day will be increased to km , and the pain resulting from the production of the last increment will be mc . Let the changes in consumption continue until its marginal increment is three units, kf , and the time of the working day would be extended to ko , while the pain of the last increment of production would equal kf if no new motives enter to influence the producer.

"When, however, the productive power of society has increased beyond a certain point, the efficiency of the workman becomes so great that *the time needed to consume what he has produced cuts into the time needed for production*, he ceases to work before the pain of the last increment of production equals the utility of the last increment of consumption. There is for the efficient workman a surplus at the margin of production, * * *"

The italics are mine, and the passage thus emphasized marks the point in the argument at which the special conception of cost must be introduced. With that view of

cost, the following argument will not be declared incorrect, but it will have a significance that the reader must think closely in order to fully understand. If the other view of cost were used, there would be an element of incorrectness running through the entire remainder of the theory.

The man whose action the diagram describes stops working at the point n , and there the pain of work is nd and the resulting gain is ne . The line de represents the excess of pleasure not offset by pain, or the surplus gained by the last period of work. This line de has no existence if cost be estimated in the way that makes it include the whole of the sacrifice entailed by labor.

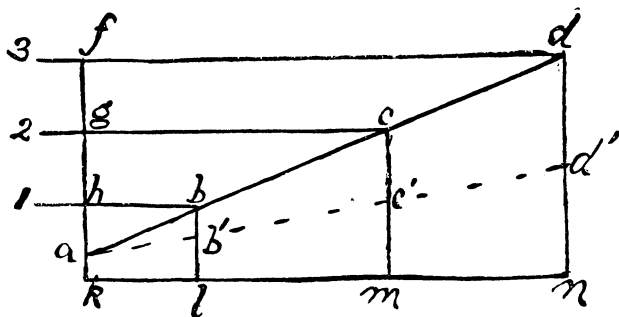
It may well be that the last hour of labor in a day secures to the worker something that, in itself alone, is worth to him more than it costs in the way of mere fatigue; but if the gaining of it entails an imperfect utilization of other things already in possession then the acquisition of it may not be profitable. It will afford no surplus. Let us say that A, B, C and D represent the articles that the man buys with his daily increase, and that, in order to get them all he must work ten hours. It is conceivable that D, the last thing purchased, may, in itself give more in the way of pleasure than the tenth hour inflicts in the way of pain; and yet it may be unprofitable to work through the tenth hour and secure the article. With only A, B and C in his possession at the end of the ninth hour of work, the man may be as well off as he would be with A, B, C and D at the end of the tenth. The extra hour of leisure adds to the subjective value of A, B and C. For the man himself this hour available for more fully utilizing these things actually puts utility into them. The loss of the hour takes utility out of them. The gain secured by the possession of D is not the entire service that this article in itself can render; it is this service minus a sum that represents the diminished service now rendered by A, B and C. There is a surplus secured by working for the article D; but that surplus is annihilated by the diminished service that the other articles

now render. This diminution is a cost, and this it is that prevents the work from being continued.

This fact, stated in another way, reveals a principle to which increasing interest and importance attaches as the industrial process perfects itself. The sacrifice involved in labor itself is coming to be largely *abstinence*. Confinement rather than fatigue is the cause of it; and this confinement burdens the man by that withdrawing of utility from things already in his possession to which attention has just been called. To the man who is confined for most of his waking time nothing is really worth what it should be, and some things are worth very little. He cannot utilize them. Though he may have them in his house he is kept from enjoying them. The man who works twelve hours a day is the typical abstainer of our modern economy. The saddest feature of his abstinence is that it is practiced on things that he actually possesses. He abstains from the full use of his house, his garden and his furnishings and decorations. He foregoes much of the enjoyment of his books and papers, and even of the comelier part of his wardrobe. He has little time for wearing good clothes, for sitting on porches in summer, or before fire-places in winter. He lacks leisure for reading, etc.

What is worse, this lack of time takes the essential utility out of the free gifts of nature. It puts a blight on air and sunlight. It spoils, for this particular man, the trees, the streams, the hills, etc. "We want to see the sunshine," the worker is made to say, in a somewhat familiar rhyme that expresses the motive of the eight-hour movement. It is the increase of utility that, for the men engaged in this struggle, two extra hours of leisure would infuse into their entire environment that is the real object to be secured. This man wants to make the sun worth something.

We can illustrate this by a modification of the author's diagram.



The ascending line $a d'$ now represents that which, in the unmodified figure was represented by the line $a d$, namely, the increasing onerousness of the mere physical or mental effort of prolonged labor. The increasing length of the lines $l b'$, $m c'$ and $n d'$, means that, as the man becomes more and more weary, each hour of work imposes a more and more painful effort. Muscular tissue, nerve tissue and brain tissue are destroyed, by the continued labor, in amounts that impose more suffering and demand more rest, as the hours of work, measured on the line kn are prolonged.

This destruction of tissue, however, is only one part of the sacrifice imposed by the work. Every hour of routine labor restricts the man's pleasurable activities. He sees somewhat less of the sunshine by reason of entering the shop for a stay of so much as three hours; and though this effect is not a striking one where the working day is thus curtailed, it becomes more and more prominent as the duration of it increases. bb' , cc' and dd' in the modified diagram stand for the sacrifice of confinement; and lb , mc and nd represent the total sacrifices involved in the final increments of labor in three working days of different lengths. The sacrifice of confinement resolves itself, in the analysis, into special and burdensome abstinence entailed by labor. The worker gives, in current phrase, "time and effort" to production; and in giving his time he incapacitates himself for the full utilization of the good things about him. The wealth

that he has in house, garden, furnishings, books, etc., as well as the free goods that nature lavishes on the human family, are worth less, in his subjective valuations, than they otherwise would be. Everything loses utility, and the lines $b'b$, $c'c$ and $d'd$ measure the depreciation of value that the man's whole environment suffers when he gives to the confined work of the shop the hours that he might use, as it were, in absorbing happiness. The "lavish summer" is at hand; but the man cannot get much good out of it.

There is a similar effect coming from the multiplying of articles of consumption, that would need to be noticed in a full analysis. Loss of time through excess of work may curtail a man's enjoyment of the commodities A, B, C and D; but the addition of E to the list may have, in some degree, the same effect. The child with many toys takes little pleasure in the earlier ones, while the child with a single toy gets all that is to be gotten out of it. The man of to-day with many books does not get as full use of the two or three volumes that constitute the nucleus of his library as one of his ancestors would have done, in the simple colonial days when these few volumes were all that there were to be had. Even consumption takes time and strength, and it cannot be made to include too many articles without some sacrifice of the benefit that it is possible to get from each. The enjoyment derived from the final one is, as Professor Patten has well shown, increased by the fact that it is different in kind from the earlier ones. Variety of goods works favorably for the consumer; but mere number works partly unfavorably, since the addition of each new one to the list withdraws time and strength from the consuming of earlier ones. If a man has a thousand books it is decidedly better that they should not be duplicates; but even if there is not a duplicate in the list, the number itself takes from the value of each separate one. This effect is made familiar by modern studies of value; but the last word concerning it has yet to be said. It is a great merit of Dr. Patten's study that, side by side with the effects known to fol-

low from increased quantity of goods consumed, he has placed the redeeming fact that wholly opposite effects are to be expected from increased variety.

We may suppose that in our illustrative diagram the lines kh , kg and kf are drawn with a full knowledge of all these effects. They represent the total good that comes to a consumer with increasing wages at his disposal, from the final increments of this consumption. In that case this total good coming from the last earnings of a normal working day will just equal the total sacrifice of the last increment of labor. The man will stop working at the point at which, on considering every element that enters into the problem, he is gaining by consumption exactly as much as he is losing by production. The last minute of work in the free laborer's normal day is a no-surplus minute.

The essay that we are discussing will, as all readers must earnestly hope, expand into a volume of ample dimensions. A catalogue of the points that are capable of such expansion would unduly prolong this notice. It is, for the reader, an exercise of rare value to expand them in his own mind as he proceeds. Even the question whether, when fully expanded, the deductions are all to be approved or not is a secondary one. Science is advanced, ultimate truth is brought nearer, by reason of all acute and suggestive studies that enter this new and fruitful field. When fully stated and amply tested the author's studies will be found to have attained very much of this truth. Not to be weighed, for importance, with any ordinary scales are the conclusions of this theory, since they tell us how and to what extent the working millions are to gain by progress. Let the studies be quickly extended that will afford such a prognosis. Let economic science do its work and gauge the weal of the future by its diagrams.

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